

Mars Entry Descent and Landing Instrumentation 2 (MEDLI2)

Completed Technology Project (2014 - 2021)



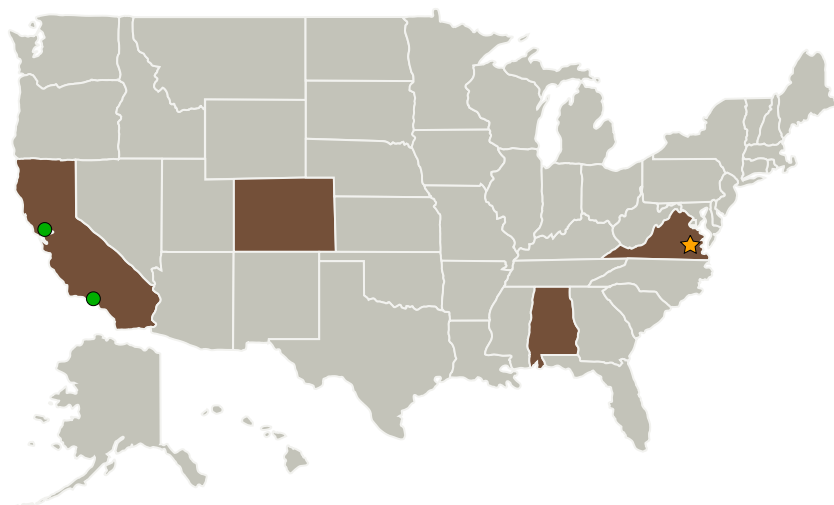
Project Introduction

MEDLI2 will reduce uncertainty in aeroshell TPS response with the potential to reduce TPS mass by up to 130 kg for a Mars 2020 class mission. MEDLI2 will reduce uncertainty in supersonic aerodynamic predictions with the potential to reduce the landing footprint size by 30%. MEDLI2 fills critical EDL knowledge gaps which represent a technology advancement in EDL. MEDLI2 advances instrumentation development essential for EDL analysis.

Anticipated Benefits

Improved understanding of risk and performance leading to the ability to reduce entry mass and reduce size of landed footprint.

Primary U.S. Work Locations and Key Partners



Mars Entry Descent and Landing
Instrumentation 2

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Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California
● Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California
Lockheed Martin Inc.	Supporting Organization	Industry	Palo Alto, California
MEDTHERM	Supporting Organization	Industry	
Tavis Corporation	Supporting Organization	Industry	

Co-Funding Partners	Type	Location
Exploration Capabilities	NASA Program	
Game Changing Development(GCD)	NASA Program	
Planetary Science	NASA Program	

Primary U.S. Work Locations	
Alabama	California
Colorado	Virginia

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Game Changing Development

Project Management

Program Director:

Mary J Werkheiser

Program Manager:

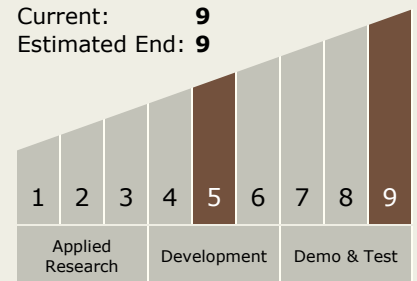
Gary F Meyering

Project Manager:

Jose A Santos

Technology Maturity (TRL)

Start: 5
 Current: 9
 Estimated End: 9



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Images

Heat Flux Sensor and Thermal Protection System sensor onto the Mars 2020 Backshell

Technician installing the heat flux sensor and Thermal Protection System sensor onto the Mars 2020 Backshell. Courtesy NASA/JPL-Caltech
(<https://techport.nasa.gov/image/>)

MEDLI2 hardware installed on the Mars 2020 Heatshield

MEDLI2 hardware installed on the Mars 2020 Heatshield. Courtesy NASA/JPL-Caltech
(<https://techport.nasa.gov/image/>)

Mars 2020 Aeroshell with the MEDLI2 hardware installed

Mars 2020 Aeroshell with the MEDLI2 hardware installed. Sensors are installed on both the heatshield (foreground) and backshell (background). Courtesy NASA/JPL-Caltech
(<https://techport.nasa.gov/image/>)

Vibration testing of the MEDLI2 primary electronics box was successfully completed recently at NASA's Langley Research Center

Vibration testing of the MEDLI2 primary electronics box was successfully completed recently at NASA's Langley Research Center
Credits: NASA
(<https://techport.nasa.gov/image/>)

Links

Improving Models of the Martian Atmosphere for Robotic and Future Human Missions to Mars
(<https://mars.nasa.gov/mars2020/timeline/landing/entry-descent-landing/#MEDLI2>)

Mars Entry Descent and Landing Instrument (MEDLI2) NASA Article
(<https://gameon.nasa.gov/projects/mars-entry-descent-and-landing-instrumentation-2-medli2/>)

MEDLI2 Installation on Mars 2020 Aeroshell Begins
(<https://www.nasa.gov/feature/JPL/medli2-installation-on-mars-2020-aeroshell-begins>)

Project Website:

<https://www.nasa.gov/directorates/spacetech/home/index.html>

Technology Areas

Primary:

- TX09 Entry, Descent, and Landing
 - └ TX09.1 Aeroassist and Atmospheric Entry
 - └ TX09.1.1 Thermal Protection Systems

Target Destinations

Earth, Mars, Others Inside the Solar System

Supported Mission Type

Projected Mission (Pull)